

CLAIMS

1. An electric power variation compensating
 device in a compound system ^{for} ~~of a~~ wind power generation
 5 and an electric power energy storage including a wind
 power generator and an electric power energy storage
 device and an electric power converting device
 provided in parallel therewith, characterized in that
 the electric power variation compensating device
 10 comprises means ~~(8a)~~ for detecting a composite current
 (Iw) of the wind power generator ~~(1a, 1b)~~; means ~~(9a)~~
 for detecting a voltage (Vs) of an electric power
 system ~~(18)~~ to which the wind power generator ~~(1a, 1b)~~
 and the electric power energy storage device ~~(4a)~~ and
 15 the electric power converting device ~~(6a, 6b)~~ are
 connected; and means ~~(8b)~~ for detecting a current (Ic)
 either inputted into or outputted from the electric
 power converting device ~~(6a, 6b)~~; wherein an output
 electric power (Pw, Qw) of the wind power generator
 20 ~~(1a, 1b)~~ is computed according to the detected voltage
 (Vs) of the electric power system ~~(18)~~ and the
 detected composite current value (Iw) ^{and} ~~as well as~~ an
 input or output electric power (Pc, Qc) of the
 electric power converting device ~~(6a, 6b)~~ is computed
 25 according to the detected voltage (Vs) of the electric
 power system ~~(18)~~ and the detected current value (Ic)
 of the electric power converting device ~~(4a)~~, and the

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2. An electric power variation compensating device in a compound system ^{for} of a wind power generation and an electric power energy storage including a wind power generator and an electric power energy storage device and an electric power converting device provided in parallel therewith, characterized in that the electric power variation compensating device comprises means ~~(8c)~~ for detecting a composite current (Iw) of the wind power generator ~~(1c, 1d)~~; means ~~(9b)~~ for detecting a voltage (Vs) of an electric power system ~~(18)~~ to which the wind power generator ~~(1c, 1d)~~ and the electric power energy storage device ~~(4b)~~ and the electric power converting device ~~(6c, 6d)~~ are connected; and means ~~(8d)~~ for detecting a current in the electric power system ~~(18)~~; wherein an output electric power (Pw, Qw) of the wind power generator ~~(1c, 1d)~~ is computed according to the detected voltage (Vs) of the electric power system ~~(18)~~ and the detected composite current value (Iw) ^{and} ~~as well as~~ an input or output electric power (Pc, Qc) of the electric power converting device ~~(6c, 6d)~~ is computed

according to the detected voltage (V_s) of the electric
 power system ~~(18)~~ and the detected current value of
 the electric power system ~~(18)~~, and the computed
 output electric power (P_w , Q_w) of the wind power
 5 generator ~~(1c, 1d)~~ and the computed input or output
 electric power (P_c , Q_c) of the electric power
 converting device ~~(6c, 6d)~~ are used as an electric
 power feed-back in a control system ~~(11b)~~ for the
 electric power converting device ~~(6c, 6d)~~.

10 3. An electric power variation compensating
 device according to claim 1 or claim 2, characterized
 in that an amount of the electric power used for the
 electric power feed-back in the control system ~~(11a,~~
~~11b)~~ is a value (P_f , Q_f) in which either the active
 15 electric power (P_w) or the reactive electric power
 (Q_w) in the output electric power of the wind power
 generator ~~(1a, 1b, 1c, 1d)~~ each of which low frequency
 components (P_{wL}) are excluded through a low frequency
 pass filter ~~(12a, 12b)~~ is added to either the active
 20 electric power (P_c) or the reactive electric power
 (Q_c) in the input or output electric power of the
 electric power converting device ~~(6a, 6b, 6c, 6d)~~.

25 4. An electric power variation compensating
 device according to claim 3, characterized in that
 either the active electric power (P_c) or the reactive
 electric power (Q_c) in the input or output electric
 power of the electric power converting device ~~(6a, 6b,~~

~~6c, 6d~~ is determined by subtracting either the active electric power (P_w) or the reactive electric power (Q_w) in the output electric power of the wind power generator ~~(1a, 1b, 1c, 1d)~~ from the electric power of the electric power system ~~(18)~~.

5. An electric power variation compensating device according to ~~claim 3~~ or claim 4, characterized in that the electric power variation compensating device further comprises a change-over switch (A, B) which makes or interrupts the active electric power (P_w) or the reactive electric power (Q_w) in the output power of the wind power generator ~~(1a, 1b, 1c, 1d)~~, and another change-over switch (C) which makes or interrupts low frequency components (P_{wL}) of the active electric power (P_w) or the reactive electric power (Q_w) in the output electric power of the wind power generator ~~(1a, 1b, 1c, 1d)~~.

6. An electric power variation compensating device according to ^{claim 1} ~~one of claims 1 through 5~~, characterized in that a superconducting magnetic energy storage device ~~(17a)~~, a static var compensating device ~~(17b)~~ or an adjustable speed electric power generating system ~~(17c)~~ is used as the electric power energy storage device ~~(4a, 4b)~~.

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